



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/509,669	04/04/2000	AKIHIRO MURATA	1058895	7794

25944 7590 06/16/2003

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

AMARI, ALESSANDRO V

ART UNIT PAPER NUMBER

2872

DATE MAILED: 06/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/509,669

Applicant(s)

MURATA ET AL.

Examiner

Alessandro V. Amari

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi, "An Innovative Bonding Technique for Optical Chips using Solder Bumps that Eliminate Chip Positioning Adjustments".

In regard to claims 1, 4, 17 and 18, Hayashi discloses (see Figures 2(a), 2(c)) an optical module comprising a mounting member having a principal surface, and a lateral surface as shown in Figures 2(a) and 2(c) and entirely made of glass as shown in Figure 3 and as described in page 226, lines 25-32 or an optical waveguide entirely made of glass and having a core and cladding formed therein, said cladding having its surface to form said principal surface in whole as shown in Figure 2(a); an interconnect (see "electrical interconnection in Figure 2(c)) formed on said mounting member and an optical element (see "optical chip" in Figure 2(c)) mounted on said principal surface and electrically connected to said interconnect and a semiconductor element (see "electrical chip" in Figure 2(c)) driving said optical element, said semiconductor element mounted on said principal surface as shown in Figure 2(c), wherein said mounting member is an optical waveguide for guiding light emitted from said optical element or light admitted to said optical element and functions as an optical input/output terminal for said optical

Art Unit: 2872

waveguide provided on said lateral surface as described on page 226, paragraph III and as shown in Figures 2(a)-2(c).

In regard to claim 2, Hayashi discloses a light-admitting aperture or light-emitting aperture of said optical element is disposed opposing said principal surface as shown in Figure 2(a).

In regard to claim 3, Hayashi discloses (see Figure 2(a)) a light-reflecting member provided on said optical waveguide and wherein light is transmitted between said optical element and said optical waveguide through said light-reflecting member as illustrated in Figure 2(a).

In regard to claim 16, Hayashi discloses a circuit (see "solderable pads") laminated directly on said principal surface as shown in Figures 2(a) and 2(c).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5-12 rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi, "An Innovative Bonding Technique for Optical Chips using Solder Bumps that Eliminate Chip Positioning Adjustments" in view of Plickert et al. U.S. Patent 5,940,550.

Regarding claim 5, Hayashi discloses the invention as set forth above but does not teach that said optical element and said optical waveguide are fixed with an adhesive member having light transmitting characteristics interposed between said

Art Unit: 2872

optical element and said optical waveguide in such a way that the position of emission or admission of light of said optical element opposes said optical waveguide, and are subjected to bare chip mounting.

Regarding claim 6, Hayashi discloses (see Figure 2(a)) that the optical waveguide has a modifying portion whereby the direction of progress of said light is changed and wherein said optical element is positioned to overlie said modifying portion as illustrated in Figure 2(a) (see "optical waveguide" and light being reflected or modified along "Z" axis).

Regarding claims 7-9, Hayashi teaches the invention as set forth above but does not teach that said optical element and said semiconductor element are integrally sealed with a resin.

Regarding claims 10-12, Hayashi teaches the invention as set forth above but does not teach that said resin has light blocking characteristics.

Regarding claim 5, Plickert et al. teaches (see Figure 1) that said optical element and said optical waveguide are fixed with an adhesive member (26) having light transmitting characteristics interposed between said optical element and said optical waveguide in such a way that the position of emission or admission of light of said optical element opposes said optical waveguide, and are subjected to bare chip mounting as shown in Figure 1 and as described in column 4, lines 25-29.

Regarding claims 7-9, Plickert et al. teaches that said optical element and said semiconductor element are integrally sealed with a resin as shown in Figure 1 and as described in column 3, lines 54-65 and column 4, lines 25-29.

Art Unit: 2872

Regarding claims 10-12, Plickert et al. teaches that said resin has light blocking characteristics as described in column 4, lines 25-29.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the adhesive member or resin of Plickert et al. in the optical module of Hayashi in order to protect the module.

Response to Arguments

5. Applicant's arguments filed 10 April 2003 have been fully considered but they are not persuasive.

The Applicant argues that the prior art, Hayashi does not disclose a mounting member having cladding formed therein with the cladding having its surface to form the principal surface in whole but instead discloses a waveguide provided in a groove formed in a mounting member which only forms a portion of the principal surface.

In response to this argument, the Examiner would like to point out that Hayashi does teach a mounting member or optical waveguide made entirely of glass and an core and cladding formed therein which is a typical planar waveguide configuration. The feature of the cladding having its surface to form said principal surface in whole is seen as an inherent teaching of Hayashi because in a planar waveguide such as Hayashi, the mounting member is made of a material (i.e., glass) and the core is a section formed in the mounting member by doping the section so that it has a higher refractive index than the surrounding material and so the surrounding material forms the cladding and forms the principal surface in whole as shown in Figures 2(a) and 2(c) of Hayashi.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (703) 306-0533. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Art Unit: 2872

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ava *ava*
June 9, 2003

Mark A. Robinson
MARK A. ROBINSON
PRIMARY EXAMINER